



Figure S1. Cross-sections of *Alnus alnobetula* wood samples showing a wedging growth ring (a) and several extremely narrow annual increments (b). White arrows indicate the respective tree ring features. These tree ring features hamper correct measurement of annual increments causing low synchronicity among different samples. Red and blue staining indicate lignified and non-lignified cells, respectively.



Figure S2. Spread of green alder (*Alnus alnobetula*) within the treeline ecotone on Mt. Patscherkofel (cf. aerial photograph given in Figure 6b of the main text). The treeline species *Pinus cembra* is visible within stands of green alder, e.g. in the center and upper right corner.